

1.0 m and branches only in the upper half of the main axis. Both M. saxicola and M. mexicana are rounded in outline, usually less than 0.3 m tall and branch from the base of the main axis. In subsequent years of flowering in these short-lived, herbaceous perennials the branching patterns are less distinctive, varying with the number of secondary inflorescences and the general vigor of the plant. Some individuals of M. multiflora when flowering for the second time may produce several small, lateral rosettes and from them bolt short flowering branches and thus be low and compact and similar to M. saxicola and M. mexicana. The capsules of M. multiflora are much larger than those of M. mexicana and M. saxicola. This size difference can be expressed by simple measures of capsule length which are: multiflora 15-25 mm, mexicana 5-13 mm, and saxicola 7-12 mm.

Mentzelia saxicola has a chromosome number of $n=10$ (Thompson and Zavortink, 1968; Powell and Powell, 1977). We now report $n=10$ for two additional populations: CHIHUAHUA. Coyame, Thompson 3730 (LA). ZACATECAS. Concepción del Oro, grown from seed collected by James Henrickson, voucher Thompson 3738 (LA). The population from Zacatecas is the southernmost known for this species. We have grown plants of M. saxicola from seed collected near Van Horn, Texas, Thompson 3545 and from Zacatecas, Thompson 3738 and all individuals were self-incompatible. Several attempts to cross these plants with other $n=10$ species of sect. Bartonia gave no viable seeds. Attempts to cross M. saxicola ($n=10$) with M. multiflora ($n=9$) were also unsuccessful although we have reported natural F_1 hybrids with $2n=19$ (Thompson and Zavortink, 1968).

We report the first chromosome counts of M. mexicana as $n=9$ and $n=10$. In the northern range of the species the six populations counted are all $n=9$: TEXAS. Brewster Co.: 10 mi N of Terlingua, Thompson 3725 (LA); N of Castolon, Big Bend Nat'l. Park, Thompson 3548 (LA); Powell and Powell 3126 (SRSC); near Terlingua, Powell 2383 (SRSC); Powell and Powell 3027 (SRSC); Boquillas Canyon, Big Bend Nat'l. Park, Thompson 3547 (LA). Presidio Co.: Big Hill, between Redford and Lajitas, Powell, Powell and Weedon 2973 (SRSC). Three populations of M. mexicana from the southern range of the species in Mexico are all $n=10$: COAHUILA. W of Cuatro Ciénegas, Powell and Tomb 2615 (SRSC), also plants grown from seed of this collection, voucher Thompson 3711 (LA); Cuatro Ciénegas, Powell and Turner 2294 (SRSC); Las Delicias, Powell and Turner 2704 (SRSC). We are unable to find any morphological character that will distinguish the $n=9$ and $n=10$ populations of M. mexicana. Our first counts of M. mexicana were from the Big Bend, $n=9$ populations and we were so surprised when the first count of plants from Coahuila were $n=10$ (Powell and Tomb 2615) that seeds were taken from this voucher specimen, plants grown at UCLA and verified as $n=10$ (voucher Thompson 3711). Both the $n=9$ and $n=10$ plants of M. mexicana are self-incompatible. We have not attempted crosses using the mexicana $n=10$ plants but plants of mexicana $n=9$ (Thompson 3548) from the Big Bend Region

were crossed with three populations of M. multiflora (all n=9): Thompson 3404 Congress, Arizona; Thompson 3557 Ghost Ranch, N.W.: Thompson 3546 Ft. Davis, Texas. Seed set in the cross mexicana 3548 X multiflora 3557 and reciprocal was low and none of the seed germinated. In the crosses mexicana 3548 female X multiflora 3404 male and mexicana 3548 X multiflora 3546 and reciprocal the seed set was high and germination was above 50%. Fifteen F₁ individuals were grown, they were vigorous but produced no pollen and set no seed. Thus M. mexicana appears to be both genetically and morphologically distinct from its nearest relative, M. multiflora.

Literature Cited

- Johnston, M.C. 1977. Brief Resume of Botanical, Including Vegetational, Features of the Chihuahuan Desert Region with Special Emphasis on their Uniqueness. Transactions of the Symposium on the Biological Resources of the Chihuahuan Desert Region, United States and Mexico. Proceedings and Transactions series -- National Park Service; no. 3, p. 336.
- _____ and J. Henrickson. In preparation. Chihuahuan Desert Flora.
- McVaugh, R. 1956. Edward Palmer: Plant Explorer of the American West. University of Oklahoma Press.
- Morafka, D.J. 1977. A biogeographic analysis of the Chihuahuan Desert through its herpetofauna. Dr. W. Junk B.V., The Hague.
- Powell, A.M. and S.A. Powell. 1977. Chromosome numbers of gypsophilic plant species of the Chihuahuan Desert. Sida 7:80-90.
- Raven, P.H. 1963. Amphitropical relationships in the floras of North and South America. Quart. Rev. Biol. 38:164.
- Thompson, H.J. and W.R. Ernst. 1963. The Loasaceae in the Southeastern United States. J. Arnold Arbor. 44:141.
- _____ and _____. 1967. Floral biology and systematics of Eucnide (Loasaceae). J. Arnold Arbor. 48:56-88.
- _____ and J. Zavortink. 1968. Two new species of Mentzelia in Texas. Wrightia 4:21-24.
- Waterfall, U.T. 1959. A revision of Eucnide. Rhodora 61:231-243.

NOTEWORTHY GRASSES FROM MEXICO IX.

Alan A. Beetle APDO POSTAL 284
 Hermosillo, Sonora, Mexico

These are results from continuing studies sponsored by the Comision Tecnico Consultiva para la Determinacion Regional de los Coeficientes de Agostadero, fundada en 1966, y es dependencia de la Secretaria de Agricultura y Recursos Hidraulicos.

For previous papers see Phytologia 27:1974; 28:1974; 30:1975; 35:1977; 38:1978; 47:1981, and 48:1981.

Agropyron vaillantianum (Wulf. & Schreb.)Trautv.

The Agropyron caninum - A. trachycaulum complex is mostly cespitose. The A. repens - A. smithii complex is generally rhizomatous. There is also a group of weakly rhizomatous plants with intermediate spike and floret characteristics which is undoubtedly of hybrid origin and which has caused a great deal of taxonomic difficulty and uncertainty.

Plants from the central highland of Mexico have been reported consistently since Urbina (cf. Urbina, 1897, Cat. de Plantas Mexicanas. Museo Nacional. Gramineae 376 - 415.) as A. repens but nevertheless appear to represent the above mentioned intermediates which have been reported from Europe, Canada, the U.S.A. and Argentina. The Mexican distribution includes Chihuahua, Durango, Oaxaca (Beetle M - 4761), Puebla, Mexico (Reeder & Reeder 3059), Tlaxcala, and Hidalgo (Rzedowski 21399 and 22435).

The Mexican plants which have slender rhizomes, narrow leaves and large glumes are apparently native, and have a close superficial resemblance to A. pseudorepens. Pohl (1962. Agropyron hybrids and the status of Agropyron pseudorepens. Rhodora 64:143 - 147) has shown that "the type of A. pseudorepens is therefore a probable male-sterile hybrid of A. trachycaulum and A. smithii. Both species are known from Nebraska. The name A. pseudorepens, if used, should be applied only to such hybrids." The Mexican plants are completely fertile producing both pollen and mature caryopses.

While looking for possible names Elymus mexicanus Cav. was encountered in Fournier, Mex. Pl., 1886, but this was described from plants cultivated "en el Real Jardin botanico" at Madrid, Spain. Kunth (Enum. Pl. 1:451. 1829) placed this name in the synonymy of the Old World E. sabulosus Bieb. Bowden (1957, Cytotaxonomy of section Psammelymus of the genus Elymus, Canadian Journal of Botany 35:951 - 993) agrees that E. mexicanus is "not a native of Mexico."

Melderis (1950. The short-awned species of the genus Roegneria of Scotland, Iceland and Greenland. Svensk Botanisk Tidskrift Bd 44, H.1. 132 - 166; cf page 141) says "the first American authors to regard these short-awned plants with dense spikes as a distinct species were Scribner and Smith. They described it in 1897 as A. pseudorepens; the holotype was collected by Rydberg in Nebraska, Kearney, n. 2018. I have seen a spikelet of a ~~topotype~~ collected by Shear (n. 272). It agrees so well with the Scottish A. donianum that it must be considered conspecific with it. As the epithet donianum is earlier than pseudorepens, the correct name of the combined species under Roegneria will be R. doniana (F.B.-White)Meld." While Agropyron donianum F. Buch.-White is accepted by Hulten (1958. The Amphi-atlantic plants and their phytogeographical connections. Kungliga Vetenskapsakademiens Handlingar. Ejärde Serien. Band 7. Nr. 1. Stockholm pp 1 - 340.), and Agropyron pseudorepens is given as a synonym, no mention is made of Mexico as part of its distribution.

There is another name, Agropyron vaillantianum, which was described from Europe. This name was used for plants in Massachusetts (Bear et al. 1947. Rhodora 49:265) and also for Argentina (Parodi, 1940, Rev. del Museo de La Plata (n.s.) III. Sect. Bot. 1 - 63.). Even though a European name is chosen it does not follow that the plant is introduced in Mexico. Other species such as Phleum alpinum, Juncus acutus, and others, have essentially the same distribution pattern including Europe, North America (incl. Mexico), and Argentina. This name being used for the first time in relation to the Mexican flora and a partial synonymy follow:

Agropyron vaillantianum (Wulf. & Schreb.)Schreb. ex Besser, Enum. Pl. 41. 1822, nomen; (Wulf. & Schreb.) Trautv. Act. Hort. Petrop. 9:329. 1884.

Synonymy:

Triticum vaillantianum Wulfen & Schreber, ap.
Schweiger et Koerte, *Florae Erlangensis* 1:143.
1811.

Agropyron repens (L.) Beauv. var. vaillantianum
(Wulf. & Schreb.) R. & S. *Syst. Veg.* 2:755. 1817.

Agropyron donianum F. B. -White, *Proc. Perthshire*
Soc. Nat. Sci. 1:41 (date?); Scott, *Naturalist*
N. Ser. 4:232. 1890.

Agropyron pseudorepens Scribn. & Smith, U. S.
Dept. Agr. Div. Agrost. Bull. 4:34. 1897.

Agropyron tenerum Vasey var. pseudorepens Jones,
Contrib. West. Bot. 14:19. 1912.

Zeia pseudorepens :unell, *Amer. Midl. Nat.* 4:226.
1915.

Agropyron repens var. subulatum forma vaillantianum
(Wulf. & Schreb.) Fernald, *Rhodora* 35:184.
1933.

Elytrigia repens (L.) Desv. var. vaillantianum
(Wulf. & Schreb.) Prokudin, *Proc. Bot. Inst.*
Kharkov. 3:189. 1938.

Roegneria doniana (F. B. -White) Meld. *Svensk. Bot.*
Tidskrift. 44:157. 1950.

Agropyron trachycaulum (Link) Malte var. majus
(Vasey) Fernald f. pseudorepens (Scribn. & Smith)
Beetle, Rhodora 54:196. 1952.

Aristida

The Mexican species of Aristida with developed but very short lateral awns may be keyed as follows:

Glumes very unequal in length Aristida hintonii

Glumes about equal in length

First glume longer, second glume shorter; purple
spikelets clumped on naked pedicels

Aristida orcuttiana

First glume shorter, second glume longer;
spikelets not clumped

Leaves filiform; inflorescence spicate

Aristida gypsophila

Leaves flat; inflorescence open

Aristida schiedeana

Aristida gypsophila sp. nov.

Perennis; culmi dense caespitosi; planta erecta, 6 - 8 dm alta, laminae filiformae, vaginae et laminae glabrae, ore cum dense pilis lanatae; panícula stricta, spiculae appressae; gluma prima 5 - 6 mm l., gluma secunda paulum magna; lemma ca 5 mm l., columna 2 mm l., torcida; aristis centralis 10 mm longis, scabris; aristis lateralis vestigias vel usque ad 1 mm l.

Perennial, tufted, culms 6 - 8 dm tall, leaves filiform, curled at the base, plants glabrous; wooly white tufts at the collar area; panicle narrow, the spikelets on short appressed pedicels; first glume ca 5 - 6 mm l., second glume slightly longer; lemma ca 5 mm long; awn column slightly twisted, 2 mm long, central awn 10 mm long, faintly antrorsely scabrous; lateral awns rudimentary or to 1 mm long.

Type collection Johnston, I.M. no. 8399 in the United States National Herbarium, collected August 23 - 25, 1941, Mexico, western Coahuila, north facing mountainside, gypsum banks, western base of Picacho de Fuste, northeast-erly from Tanque Vaionetta, about lat. 27 deg. 34'N.

Johnston, I.M. 8714, from western Coahuila, vicinity of Aguaje del Pajarito is apparently the same but is badly smutted. Aristida gypsophila is a part of the endemic floral elements associated with gypsum soils which include Bouteloua chasei and Muhlenbergia gypsophila.

Brachypodium

Key to the Mexican species:

Annual Brachypodium distachyon

Perennial

Awnless

Leaves filiform, mostly basal

Brachypodium pringlei

Leaves flat, equally distributed

Brachypodium mexicanum var. inerme

Awned

Slender, straggling, the leaves weakly scabrous, spikelets small, 2 - 2.5 cm long

Brachypodium mexicanum

Robust, erect, the leaves strongly scabrous, spikelets large, 3 cm 1 or longer

Brachypodium latifolium

Brachypodium mexicanum var. inermis var. nov.

B. mexicanum similis sed lemmata sine aristis vel aristis inaequalis vestigiis.

Like the species but the awns of the lemma either totally lacking or irregularly reduced.

Type collection F.G. Meyer and D.G. Rogers 2978, Mexico, Nuevo Leon, Sierra Madre Oriental, densely tufted perennial to 12 in tall in open pine forest, alt. 3333 m., Cerro del Viejo, 15 mi. west Dulces Nombres, Municipality Zaragoza, August 18, 1948, type in the U.S. National Herbarium.

There is a second collection, Stanford et al. 645 from Tamaulipas, Mexico in the U.S. National Herbarium. The type collection of B. pringlei Scribn. in Beal is Pringle 2525 in the type case and is true B. pringlei. A second sheet of Pringle 2525 in the general collection is B. mexicanum var. inermis. A third sheet of Pringle 2525, also in the general collection, is a mixture of B. pringlei and B. mexicanum var. inermis.

Digitaria biformis Willd.

var. chrysoblepharis (Fig. & DeNot.) comb nov.

D. chrysoblephara Fig. & DeNot. Mem. Acad. Sci. Torino II. 14: 364. 1854, African.

D. ciliaris Retz. var. chrysoblepharis (Fig. & DeNot.) Beetle, Phytologia 48:190. 1981.

D. adscendens (HBK) Henrard, ssp. chrysoblepharis (Fig. & DeNot.) Henrard, Monogr. Digitaria 160, 998. 1950.

Bor (Grasses of Burma, Ceylon, India and Pakistan 299. 1960) has pointed out the differences between D. bicornis and D. biformis. Additionally Veldkamp (Blumea 21: 1 - 80. 1973) has shown that the type of bulbous based bristles which are found in Digitaria ciliaris are not characteristic of the D. bicornis - D. biformis complex.

Erioneuron avenaceum (HBK) Tateoka

var. longearistatum (Kurtz) comb nov.

Synonymy:

Erioneuron grandiflorum (Vasey) Tateoka, Amer. Jour. Bot. 48:572. 1961.

Triodia avenacea HBK var. longearistata Kurtz, Rev. Mus. La Plata 5:301. 1893.

Sieglingia avenacea (HBK) Kuntze var. grandiflora (Vasey) Dewey, Contrib. U.S. Natl. Herb. 2:538. 1894.

Erioneuron avenaceum (HBK) Tateoka var. grandiflorum (Vasey) Gould

Sieglingia grandiflora (Vasey) Beal, Grasses N. Amer. 2:471. 1896.

Triodia grandiflora Vasey, Contrib. U.S. Natl. Herb. 1:59. 1890.

Tridens grandiflorus (Vasey) Woot. & Standl., N. Mex. Coll. Agr. Bull. 81:129. 1912.

The variety longiaristata of Kurtz is based on Pringle 406 from Chihuahua, Mexico. It was identified with Erioneuron pilosum as a synonym of Triodia acuminata (Munro) Vasey by Stuckert in 1904 in his Gramineas Argentinas and recently was the basis for Erioneuron pilosum (Buckl.) Nash var. longearistatum (Kurtz) Anton, Kurtziana 10:63. 1977. This is clearly in error, and the name Triodia avenacea var. longiaristata Kurtz is correctly referred to "Tridens grandiflorus (Vasey) Woot. & Standl." in Chase's Index to Grass Species.

Koeleria cristata var. geniculata (Fourn.) comb nov.

Achaeta geniculata Fourn. Mex. Pl. 2:109. 1886. Based on Lieberman 609 from Mexico.

This name is needed to cover the Mexican plants which have conspicuous rhizomes.

Leptochloa filiformis (Lam.) Beauv.
var. pulchella (Scribn.) comb. nov.

Based on Leptochloa mucronata (Michx.) Kunth var. pulchella Scribn. Bull. Torr. Club. 9:147. 1882, the type, a Pringle collection from Arizona is in the U.S. National Herbarium.

This variety is mostly coastal, and is very abundant at Guaymas, Sonora, Mexico. It is typically dwarf, narrow leaved, with the inflorescence consisting of a few short and divaricately spreading racemes.

Panicum acuminatum Sw. var. fasciculatum (Torr.) comb. nov.

Panicum dichotomum L. var. fasciculatum Torrey, Fl. North and Mid. U.S. 145. 1824.

Panicum implicatum Scribn. in Britt. & Brown, Illustr. Fl. 3:498. 1898.

Panicum acuminatum Sw. var. implicatum Beetle

Dichanthelium acuminatum (Sw.) Gould & Clark
var. implicatum (Scribner) G. & C.

See Freckmann, R.W. 1981. Phytologia 48:99-110.
Realignments in the Dichanthelium acuminatum complex.

Scleropogon Philippi, Sert. Mendoc. 2:47. 1871.

This genus has traditionally been treated as monotypic but apparently there are two species which may be keyed as follows:

Dioecious, rhizomatous, the panicles scarcely exserted above the leaves, the awns 3 - 5 cm long, at maturity twisted and strongly recurved

Scleropogon brevifolius

Monoecious, stoloniferous, the panicles well exserted above the leaves, the awns 5 - 15 cm long, twisted but not strongly recurved

Scleropogon longisetus

S. brevifolius Philippi, An. Univ. Chile 36:206. 1870.
Described from Mendoza, Argentina.

Synonymy:

Lesourdia karwinskyana Fourn. Soc. Bot. France Bull.
27: 102. 1880. Described from Mexico.

Lesourdia multiflora Fourn. Soc. Bot. France Bul. 27:
102. 1880. Described from Mexico.

Tricuspis monstrosa Munro in Hemsl. Diagn. Pl. Nov.
Mex. 56. 1880, name only, in synonymy.

Scleropogon karwinskyanus (Fourn.) Benth. ex S. Wats.,
Amer. Acad. Sci. Proc. 18: 181. 1883.

Perennial, rhizomatous, the plants ca. 1 dm tall, densely branching, the leaves basal, the blades flat, 1 - 2 mm wide, 1 - 2 cm long, rather sharp pointed.

All plants dioecious, the inflorescences narrow, few-flowered racemes or simple panicles; staminate and pistillate spikelets strikingly different in appearance, the male large and awnless, the female long-awned; female spikelets one to several flowered, the upper florets reduced to awns, the rachilla disarticulating above the glumes, the florets falling together; glumes acuminate, 3-nerved, the first glume half as long as the second, the lemma narrow, 3-nerved, the nerves extending into slender scabrous spreading awns 5 - 15 cm long, the lowest floret with a sharp-bearded callus; palea narrow, the two nerves near the margin becoming short awns.

The distribution of this species is disjunct. Mexican reports include the northeastern and central states of Nuevo Leon (Beetle M-407 and 642), Tamaulipas, Veracruz (Ventura 1542 and 1543), San Luis Potosi (Beetle M-2112), Hidalgo (Rzedowski 20546 and 20547), and Puebla. This species also occurs in northern Argentina. Similar disjunct distributions are found in Monanthochloe, Blepharidachne, Munroa, Tridens, and Erioneuron. A chromosome count of 2n equals 40 is based on Reeder and Reeder 4805 from S.L.P., Mexico.